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Supreme Court, U.S.
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IN THE

Supreme Court of the United States

OCTOBER TERM, 1994

UNITED STATES OF AMERICA,

Petitioner,

—v.—

COMMONWEALTH OF VIRGINIA, *et al.*,

Respondents.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

BRIEF *AMICI CURIAE* IN SUPPORT OF PETITIONER BY THE AMERICAN ASSOCIATION OF UNIVERSITY PROFESSORS; THE CENTER FOR WOMEN POLICY STUDIES; THE PROGRAM ON GENDER, SCIENCE AND LAW; STANLEY ARONOWITZ, PH.D.; STEPHANIE J. BIRD, PH.D.; PATRICIA CAMPBELL, PH.D.; BLYTHE MCVICKER CLINCHY, PH.D.; MARY CRAWFORD, PH.D.; FAYE J. CROSBY, PH.D.; KAY DEAUX, PH.D.; CYNTHIA FUCHS EPSTEIN, PH.D.; MICHELLE FINE, PH.D.; CAROL GILLIGAN, PH.D.; MARY S. HENIFIN, M.P.H., J.D.; RUTH HUBBARD PH.D.; VILMA HUNT, B.D.S., M.A.; ANNE S. KASPER, PH.D.; PENELOPE KEGEL-FLOM, PH.D.; EVELYN FOX KELLER, PH.D.; VALERIE E. LEE, ED.D.; ZELLA LURIA, PH.D.; MAUREEN PAUL, M.D., M.P.H.; DIANE S. POLLARD, PH.D.; SUSAN REVERBY, PH.D.; JO SANDERS; BERNICE SANDLER, ED.D.; ELLEN WAHL; LESLIE WOLFE, PH.D.

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Interest of *Amici Curiae*

Amici curiae[1] are scientists, scholars, educators and professional organizations with an interest in the scientific issues raised in this case.[2] The research conducted by some *amici* was explicitly relied upon by the parties and the courts below. *Amici* are appearing in this proceeding to discuss the scientific issues addressed by the lower courts and their relevance to the legal questions presented.

Summary of Argument

Virginia Military Institute,[3] a state-supported all-male school, excludes otherwise qualified female students solely because of their sex. The question before this Court on cross-petitions for a writ of *certiorari* is whether that admissions policy violates the Equal Protection Clause and, if so, whether the violation can be cured by the creation of a separate single-sex program for women.

VMI has sought to justify its single-sex status by relying on purportedly scientific evidence relating to alleged physiological and psychological differences between the sexes and the purported benefits to males from single-sex education at VMI. Even if these claims were accurate, however, they would be insufficient as a matter of law, because sex-based classifications that rely on stereotypes violate equal protection even if some statistical support "can be conjured up." *J.E.B. v. Alabama ex rel. T.B.*, 114 S. Ct. 1419, 1427 n.11 (1994). Likewise, in defense of the remedial plan, VMI offers "'the very stereotype the law condemns.'" *Id.* at 1426. None of the interests asserted by VMI provides the "exceedingly persuasive" rationale necessary to justify a policy that

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[1] This brief is filed on behalf of Petitioner. The parties have consented to the filing of this brief, and their letters of consent have been filed pursuant to Rule 37.3 of the Rules of this Court.

[2] Individual statements of interest appear in an Appendix to this brief.

[3] Respondents are referred to herein collectively as "VMI."

explicitly relies on stereotypes and perpetuates historical patterns of discrimination: it is not relevant if "the benefited class profits from the classification," nor can there be a legitimate interest in providing men with a college "composed of members of a particular...gender." *Mississippi Univ. for Women v. Hogan*, 458 U.S. 718, 731 n.17 (1982); *J.E.B.*, 114 S. Ct. at 1430 (O'Connor, J. concurring), 1434 (Kennedy, J. concurring). Point I.

To avoid the plain import of the law, the lower courts relied on tenuous theories about alleged sex-based differences and the purported benefits of single-sex education for men. These propositions were often advanced by witnesses with no apparent expertise, whose testimony lacks necessary indicia of scientific validity and evidentiary reliability. *See* Fed.Rules Evid. Rules 702-703, 28 U.S.C.A.; *Daubert v. Merrell Dow Pharmaceuticals*, 113 S. Ct. 2786 (1993). The record oversimplifies highly complex areas of research and misinterprets scholarly research, including that of Carol Gilligan and Valerie Lee, *amici curiae* herein. Such "proofs" are clearly inadequate to justify discrimination, both in themselves and as a matter of law. Point II.

ARGUMENT

Assertions about differences between the sexes have historically been advanced to rationalize social arrangements that have disadvantaged women. For example, the "craniology" movement of the nineteenth century sought to "prove" that intelligence was a function of brain size, to establish male intellectual preeminence over women and justify the denial of educational and employment opportunities for women.[4] In *Muller v. Oregon*, 208 U.S. 412, 421 (1908) (Bradley, J., concurring), the Court deferred to the "abundant testimony of the medical fraternity," finding that women's biological vulnerability justified

[4] Marian Lowe, *Social Bodies: The Interaction of Culture and Women's Biology, in Biological Woman: The Convenient Myth* 100-06 (Hubbard, et al. eds., 1982); Stephen J. Gould, *The Mismeasure of Man* (1981).

limiting their hours of work.[5] The history of the legal and social disenfranchisement of women demonstrates the seemingly timeless appeal of pseudo-scientific and oversimplified arguments about "women's nature" to rationalize sex discrimination. Women's constitutional right to equal access to state educational opportunities should rest, not on problematic theories about purported sex-based biological and psychological differences, but rather on the enduring principles expressed in the Equal Protection Clause.

I. VMI'S SEX-BASED ADMISSION POLICY VIOLATES EQUAL PROTECTION.

The overriding purpose of the Equal Protection Clause is to guarantee inclusion of historically disenfranchised segments of the population within the political, social and economic fabric of American life. The goal of inclusion is so significant that this Court has recognized a compelling interest in governmental efforts to eradicate sex discrimination, even when a negative impact on the right of freedom of association is asserted. *E.g., Roberts v. United States Jaycees*, 468 U.S. 609, 628 (1984). In modern equal protection jurisprudence, this Court has never endorsed the perpetuation of historical discrimination against women, or sanctioned the claim, pressed by VMI, that males are entitled to exclusive access to a valuable state benefit because they have historically monopolized it.[6]

[5] As a result, women were disqualified from a variety of lucrative jobs. Alice Kessler-Harris, *Out to Work* (1982); Judith Baer, *The Chains of Protection* (1978).

[6] This Court has rejected sex-based classifications even when used to advance otherwise valid purposes. *E.g., Reed v. Reed*, 404 U.S. 71 (1971) (administrative and cost concerns); *Craig v. Boren*, 429 U.S. 190 (1976) (preventing traffic accidents); *Orr v. Orr*, 440 U.S. 268 (1979) (assisting needy spouses "a legitimate and important objective"). The only relevant exception does not apply here: when such a classification "intentionally and directly assists members of the sex that is disproportionately burdened" and "compensate[s] for discriminatory barriers faced by women." *Hogan*, 458 U.S. at 728-29.

A. VMI's Policy of Exclusion Is Based on Impermissible Generalizations and Stereotypes.

Rather than affirm the constitutional priority of inclusion, the lower courts affirmed the exclusion of those who, they admit, are qualified but for their sex. They reached this extraordinary result in reliance on stereotypes and generalizations that concededly do not apply to all women. At the liability trial, VMI's witnesses testified that women are physically weaker;[7] that they are more emotional and cannot take stress as well as men;[8] that they are less motivated by aggressiveness and suffer from fear of failure; and that more than a hundred physiological differences contribute to a "natural hierarchy" in which women cannot compete with men.[9] While acknowledging "some contribution to ballet," one witness expressed the view that women excel over men only in their "joint mobility" and their ability to produce and nurse babies.[10] Other witnesses testified to psychological and developmental differences between men and women, in particular men and women's alleged "different ways of knowing," women's "ethic of caring" and men's "ethic of justice."[11] These and other assertions about sex-based differences, with women's deficiencies assumed if not stated, were embraced by the trial court and formed the basis for the remedial plan. *United States v. Commonwealth of Virginia*, 766 F.Supp. 1407, 1412-13, 1434, 1439-40 (W.D.Va. 1991) ("*VMI I*").

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[7] *United States v. Commonwealth of Virginia, et al.*, (W.D.Va.)(90-01260-R). Transcript of Proceedings, April 11-14, 1991 (liability) (hereafter "Tr.") at 519-22 (Toffler), 902-06 (Davis).

[8] *Id.* at 810-11 (Bissell).

[9] *Id.* at 931-33 (Davis).

[10] *Id.* at 932, 939-40 (Davis). Much of the testimony on these issues is inherently unreliable. *See* Point II, *infra*. While insufficient to prove the truth of the assertions, this testimony exposes the stereotypes at the core of VMI's practices and the proposed remedial plan.

[11] *Id.* at 376-78 (Conrad), 686 (Richardson).

The remedial plan likewise "recognizes...that 'men and women are different....' [and] seeks to utilize educational methodologies that are appropriate to women...."[12] Under the plan, the Virginia Women's Institute for Leadership ("VWIL") at Mary Baldwin College ("MBC") is proposed as a means to avoid admitting women into VMI. It is not intended to address the needs of women who seek entrance to VMI, nor is it anticipated that it will be "equal" to VMI in any material respect; rather, VMI and VWIL are said to be "comparable" in terms of "leadership" training.[13] "If VMI marches to the beat of a drum, then [VWIL] marches to the melody of a fife...." *United States v. Commonwealth of Virginia*, 852 F.Supp. 471, 484 (W.D.Va. 1994) ("*VMI II*").

VWIL will differ from VMI on every relevant measure: curriculum (what is offered); pedagogy (how it is offered); and educational consequences (post-graduate measures). VMI's "extreme adversative" education is characterized by a highly disciplined, authoritarian and hierarchical model of instruction and leadership.[14] The program purports to meet the developmental needs of "relatively undisciplined"[15] adolescent males who "come in with [an] inflated sense of self-efficacy that must [be] knocked

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[12] *United States v. Commonwealth of Virginia* (4th Cir. Nos. 94-1667, 94-1717) (remedy) Joint Appendix (hereafter "J.A."), Vol. I at 43 (quoting *United States v. Commonwealth of Virginia*, 976 F.2d 891, 897 (4th Cir. 1992)).

[13] J.A. Vol.II at 620-1 (Tyson), 738 (Richardson). Concededly, the two schools cannot be "comparable" in terms of history, tradition, or prestige, as recognized by the court below. *United States v. Commonwealth of Virginia*, 44 F.3d 1229, 1241 (4th Cir. 1995) ("*VMI II*").

[14] J.A. Vol. II at 623-24 (Tyson), 598 (Wilson), 671 and 673 (Riesman).

[15] *Id.* at 666 (Riesman).

down."[16] VWIL, in contrast, is intended for "shy, self-distrustful young women"; it will be "supportive and encouraging. And [will promote] cooperative leadership, not chain-of-command,"[17] because "we really don't need to beat upityness [sic] and aggression and all of that out of young women."[18] The model for VWIL is "the young woman who went to a large coeducational high school...and was about to give up on the possibility that she could compete with young men....";[19] she is said to need a "sense of self-efficacy and competence."[20] Unlike VMI with its substantial curriculum in science and engineering, VWIL will not offer engineering courses, a physics major, or a Bachelor of Science degree.[21]

The generalizations and stereotypes on which the plan relies are clear. Heather Wilson, MBC Dean of Students, testified:

> The VMI model wasn't adopted [for VWIL] because young men and young women of 18 come to college, having had different experiences in their lives. I can't even tell you when it starts except that I know that a friend of mine is [a] clinical psychologist [and] has a four year old daughter who she is trying to raise very carefully....Her four year old's favorite movie is Aladdin....In the movie Aladdin, and this is representative of what young children are taking

[16] *Id.* at 598 (Wilson).

[17] *Id.* at 677-79 (Riesman).

[18] *Id.* at 572 (Fox-Genovese).

[19] *Id.* at 574 (Fox-Genovese).

[20] *United States v. Commonwealth of Virginia* (W.D.Va) (90-01260-R) Transcript of Proceedings Feb. 9-12, 14-15, 1994 (remedy) (hereafter "Tr. II") at 299 (Fox Genovese); J.A. Vol.II at 453-54 (Lott) and 623 (Tyson).

[21] J.A. Vol.II at 491-93 (Lott).

> in, the princess, even though she has a large tiger at her command, has to wait to be rescued by Aladdin.
>
> Children[s'] stories are filled with things like this....[W]omen internalize these messages; they should take the passive role not the active role....[22]

Wilson repeatedly offered generalizations and anecdotes, instead of evidence:

> young men [in fraternities] will paddle their pledges; they will brand them; they will make them consume alcohol and will make them eat disgusting things....Young women [in sororities] will give flowers, write poems....[23]

David Riesman, another VMI witness, offered a potpourri of inaccurate overgeneralizations:

> ...[W]omen at the present so often flounder [with regard to] [s]patial things, geometric things, topology, math and physics, and leadership itself...."
>
> ***
>
> When the boys have a chance to run on the school track, [t]hey run and they run and they run and they run....
>
> When girls have a chance to go up on the track, they don't stick at it long.
>
> ***
>
> One reason I suspect [women] don't do as well in verbal tests, they don't read as many sports stories as boys do.
>
> ***
>
> ...In the rat system [at VMI] one has one's buddies to

[22] *Id.* at 595-97. Anecdotes like this provide no basis for a generalization about girls. Some girls may reject messages from movies; others may have chosen to see "Aliens" instead of "Aladdin ."

[23] *Id.* at 599.

> endure it with one, and one is *being what boys are supposed to be*, brave, physically hardy, unafraid.[24]

Riesman testified that women who are "less self-distrustful" will also benefit from VWIL, because they need to be

> reminded that their leadership styles, while impressive, have also the hazard of being oppressive...[and that they should] depend more on persuasion or on cooperation, more on connectedness.[25]

Richardson conceded that "[t]here is not in the VMI paradigm a place for the woman leader who excels and does *those things that women are expected to do*...."[26]

Carol Lewis Anderson, a member of the MBC Board of Trustees, described "an education that suits a woman's style of learning":

> I will give you...just a few issues. One is that it not be confrontational and crude and mean. The toilet bowl is a good expression of *what is not suitable for women*.
>
> One that is encouraging...not one that is challenging in abusive ways.
>
> ***
>
> ...Men apparently...and my husband will attest to this from fraternity hazing that he has friends with whom he [w]as hazed who will be friends for life...because they experienced something together that was so horrible that it brought them together.

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[24] *Id.* at 684-85 and Tr.II at 538, 546 (emphasis added).

[25] J.A. Vol. II at 682 (emphasis added).

[26] *Id.* at 741-42 (emphasis added).

> Well, women bond, too, but *women bond from experiences that are wonderful*.[27]

The record is thus replete with classic, time-worn generalizations picturing women as passive, men as aggressive; women as peaceful, men as violent; women as cooperative, men as competitive; women as insecure, men as confident. The record is sprinkled with references to what males and females *should* do and *should* be, reflecting not only stereotypical notions about the proper roles of men and women but also the plain intent to create two institutions that encourage, if not require, students to conform to the stereotype for their sex.

Even proponents of the remedial plan ultimately conceded that alleged differences are *not* the result of innate differences, are *not* experienced by all members of the same sex the same way, and are, by definition, sometimes inaccurate generalizations. James Lott, MBC Dean of Students, testified that there "are no inherent differences in the way men and women learn,"[28] and Riesman testified that he has "known and...worked with many women who do not fit this picture at all."[29] Lott acknowledged that the adversative method is not "inherently or innately inappropriate" for women.[30] He also acknowledged that VWIL would not be appropriate for women who seek admission to VMI.[31]

Elizabeth Fox-Genovese, a historian who testified in support of the plan, analogized such women - who seek to go to VMI - to Myra Bradwell. She characterized their "high roller

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[27] Tr. at 450-52 (emphasis added).

[28] J.A. Vol.II at 440-41; and *see id.* at 474 (Lott), 624 (Tyson).

[29] *Id.* at 681.

[30] *Id.* at 472; *see also id.* at 521, 525-26.

[31] *Id.* at 540-42 (Lott). *See also id.* at 668 (Riesman), 578-79 (Fox Genovese).

ambition" as being "as much fancy as it is reality." In Bradwell's day, she claimed, "women that wanted to support themselves became nurses, teachers, librarians...." VWIL, she suggests, is intended to discourage women from such "high roller ambition" as the desire to attend VMI or "climb Everest because it is there."[32]

B. The Generalizations Offered By VMI Are Inaccurate and Misleading.

> The scientific record on questions of sex differences...is shaky at best. Examples of bias are numerous.... There are without doubt some behavioral differences between women and men. Yet the size of these differences is often smaller than purported and their appearance is often highly dependent on context.[33]

While it is undoubtedly true that there are average differences between the sexes, even VMI concedes and the trial court recognized that many individuals of both sexes do not conform to the "average" for their sex. Nonetheless, VMI succeeded in convincing the trial court that, because these generalizations had some ostensible statistical support, they were not stereotypes.[34] This conclusion is insupportable. In the professional literature, the "issue of stereotype accuracy really has two parts: first, the accuracy of the hypothetical average as a

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[32] *Id.* at 578-79.

[33] Kay Deaux and Mary Kite, *Thinking About Gender, in Analyzing Gender: A Handbook of Social Science Research* 97 (Hess & Ferree eds., 1987). Even observers of average differences do not claim a causal relationship between sex and specific behaviors or dispute the substantial overlap between the sexes. *See* Alice Eagley, *The Science and Politics of Comparing Women and Men*, 50 Am. Psych. 145 (1995). *See also* Elizabeth Fox-Genovese, *Feminism Without Illusions: A Critique of Individualism* 254 (1991) ("the vast majority of our social roles result from social choices, not from the dictates of biology...").

[34] *E.g.*, 766 F. Supp. at 1434 and J.A. Vol.II at 572 (Fox-Genovese).

description of the total population; and second, the fit of the general category to the individual case."[35] Even stereotypes that are accurate with regard to the "total population" can still be *in*accurate with regard to individuals within the population:

> The more pernicious aspect of stereotypes lies in the application of the general category, however imperfectly defined, to the case of the individual. Given the wide within-sex variation in virtually every trait or behavior associated with gender stereotypes, overgeneralization is axiomatic.[36]

Gender stereotypes represent "very general categories...refer[ing] to approximately half of the world's population."[37] They often have little predictive value:

> [A]t most, scientists can hope to discover generalizations that are true of 'some women' and 'some men'.... And then, of course, the research is concerned with discovering, for example, which men are more aggressive than which women. Asking general questions about males and females, men and women (where 'all men' or 'all women' is implicit)...[thus] serves to obscure the very substantial ways in which class, ethnic background, education, and a whole host of other social experiences

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[35] Kay Deaux & Mary Kite, *Gender Stereotypes in Psychology of Women: A Handbook of Issues & Theories* 113 (Denmark & Paludi eds., 1993) [hereinafter *Gender Stereotypes*].

[36] *Id. See also Webster's Third New International Dictionary* (Unabridged) (1986), which defines a stereotype as "...something conforming to a fixed or general pattern and lacking individual distinguishing marks or qualities; especially *a standardized mental picture held in common by members of a group and representing an over-simplified opinion*...(Emphasis added).

[37] Deaux & Kite, *Gender Stereotypes, supra*, at 115.

result in differences and similarities.... [38]

Stereotypes have a "prescriptive character...channeling the activities and choices individuals make and, in some instances, reinforcing the distinctions between women and men."[39] In other words, they become self-fulfilling prophesies. They also represent categorical thinking, which in turn invites invidious comparison:

> Men [are] typically seen as stronger and more active, characterized by high needs for achievement, dominance, autonomy, and aggression. Women, in contrast [are] believed to be more concerned with affiliation nurturance and deference.[40]

Stereotypes thus foster prejudice by causing people to "see things that are not there while ignoring things that are....These misperceptions, in turn, can serve to confirm the expectancies that a person has about members of stereotyped groups and ultimately perpetuate those stereotypes."[41]

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[38] Mary Brown Parlee, *Women, Peace and The Reproduction of Gender, in On Peace, War and Gender: A Challenge to Genetic Explanations* 106 (A.H. Hunter ed. 1991).

[39] Deaux & Kate, *Gender Stereotypes, supra*, at 112. *See also* Cynthia Fuchs Epstein, *Deceptive Distinctions: Sex, Gender, and the Social Order* 84 (1988) ("discrimination results from the expectations people have of others who belong to groups believed to possess certain traits").

[40] Deaux & Kite, *Gender Stereotypes, supra*, at 114. *See also* Carol Gilligan, *In a Different Voice: Psychological Theory and Women's Development* 17 (1982) ("the qualities deemed necessary for adulthood - the capacity for autonomous thinking, clear decision-making, and responsible action - are those associated with masculinity and considered undesirable as attributes of the feminine self").

[41] Deaux & Kite, *Gender Stereotypes, supra*, at 111 (reference omitted).

There are no psychological, behavioral or cognitive traits in which males and females do not overlap, and in most cases the area of overlap is larger than the area of difference.[42] In addition to misleading testimony about perceived psychological, behavioral and cognitive differences, VMI also presented a vast amount of testimony about alleged physical and physiological differences, much of which the trial court embraced.[43] For example, the trial court cited average differences between the sexes in body fat and aerobic capacity.[44] Body fat, like many characteristics, varies among individuals: even if the proportion of body fat for the "average" woman is 25%, for female gymnasts it is 15.5%, for sprint swimmers 14.6%, and for distance runners 15.2%-16.9%.[45] The conclusion that women have "[o]n the average...10% more body fat [which] imposes a burden on some kinds of physical performance," *VMI I*, 766 F. Supp. at 1433, does not accurately describe some women, and fails to account for the advantage body fat confers in some activities. For example, women have an advantage in long-distance swimming because body fat provides

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[42] Rhoda Unger & Mary Crawford, *Women and Gender* (2nd Ed.) (forthcoming 1996). Sex differences can only be understood if both central tendency (averages) and variability (range and distribution) are considered. Comparing the range and distribution for each sex demonstrates the extent of overlap between the sexes. *Id. See also* J.S. Hyde & M.C. Linn, *The Psychology of Gender* (1986).

[43] This evidence is apparently relevant to VMI's rigorous physical education program. However, VMI's goal is to produce "leaders," not athletes, and students are not selected based on their athletic ability, as demonstrated by the fact that almost half of the entering cadets do not meet the physical fitness standard. Tr. at 316-17 (King).

[44] *VMI I*, 766 F. Supp. at 1432-33.

[45] *See* T.D. Fahey, *Endurance Training, in Women and Exercise: Physiology and Sports Medicine, 2nd Ed.* 80 (Shangold & Mirkin eds., 1994); R.W. Hale, *Differences and Similarities Between the Sexes, in Caring for the Exercising Woman* 32 (Hale ed., 1991).

greater buoyancy and cold resistance.[46]

Even with regard to aerobic capacity, the significance of apparent differences is unclear: "there appears to be very little difference in ability to supply adequate oxygen to the tissues...indicat[ing] that this is not an area of significant difference between males and females."[47] Evidence of other physical differences is equally hard to interpret and apply. For example, assessing strength by measuring the ability to lift an object onto the tailgate of a truck favors males because greater height provides an advantage in such a task.[48] Physical ability can be measured in other ways to display women's strengths,[49] and comparisons could focus on women who are likely to apply to VMI, who might not conform to average data: "female and male athletes are more similar to one another than they are to non-athletic members within their own sexes."[50]

In sum, the concept of sex difference in this record is used

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[46] W.D. McArdle, *Essentials of Exercise Physiology* 111-12 (1994) ("[T]he record for an English Channel swim of 7 hours 40 minutes is held by a [woman]...the men's record [is] 8 hours 12 minutes.").

[47] Hale, *supra*, at 31, 34.

[48] The trial court found differences in the ability to lift an object to the height of the tailboard of a military truck and the ability to do push-ups. *VMI I*, 766 F. Supp. at 1433. Males also tend to have an advantage doing push-ups because of their lower center of gravity.

[49] *See* Myron Genel, *Gender Differences in Growth and Maturation: Are These Relevant for Athletic Competition?* 4 J.Women's Health 425 (1995) (measures of athletic performance that highlight "speed, agility and endurance" show smaller sex differences than those that emphasize strength; "some people have predicted that women's [long-distance running] times will exceed those of men in the next century").

[50] M. Boutilier & L. SanGiovanni, *Women and Sports: Reflections on Health and Policy, in Women, Health, and Healing: Toward a New Perspective* 209 (Lewin & Olsesen eds., 1985).

ambiguously and unscientifically in several respects: anecdotes are substituted for scientific measurement of representative samples of the population; variability (range and distribution) is ignored; and averages, which are central tendencies, are improperly used to predict the performance of individuals. Some women are tall, some men are short; some men are passive, some women are aggressive. Knowing that on average men are taller than women will indicate nothing about an individual's height; knowing a person's height does not reveal his or her sex. The remedial plan, an embodiment of stereotypical thinking, would ignore this reality, preferring instead to impose a "standardized mental picture" of each sex, even though it represents an "over-simplified opinion" that "see[s] things that are not there while ignoring things that are."

C. There Is No Constitutionally Sufficient Rationale To Justify a Continuing Exclusion of Women.

As shown above, VMI advances, as the justification for its discriminatory practice, "'the very stereotype the law condemns.'" *J.E.B.*, 114 S. Ct. at 1426 (citation omitted). VMI's position mirrors a classic pattern:

> much of the testimony...ignores individual differences among members of each sex and reads like 'ancient canards about the proper role of women'....The witnesses claimed that women...are not strict disciplinarians; that they are physically less capable...; that [others] take advantage of them...while male[s]...are strong father figures who easily maintain discipline....

Dothard v. Rawlinson, 433 U.S. 321, 343-44 (1977) (Title VII case) (Marshall, J., concurring in part and dissenting in part) (citation omitted). The Court has consistently rejected the contention that sex-based differences in the average justify discrimination based on sex. *See, e.g., Reed*, 404 U.S. 71 (more men than women likely to be qualified to administer estates); *Craig*, 429 U.S.190 (more men than women drink and drive); *Orr*,

440 U.S. 268 (more women than men require alimony).[51] In each of these cases, the statistics used to support the sex-based classification were inadequate to prove "that gender alone is an accurate predictor." *J.E.B.*, 114 S. Ct. at 1427.

Only last term this Court observed that it is irrelevant "if a measure of truth" underlies a stereotype; stereotypes are forbidden "even when some statistical support can be conjured up for the generalization." *J.E.B.*, 114 S. Ct. at 1427 n.11. In *J.E.B.*, the Court rejected the "quasi-empirical claim that men and women have different attitudes...." While acknowledging the fact that "the two sexes are not fungible," this Court nonetheless repudiated reliance on "gross generalizations." *Id.* at 1424, 1427 (citation omitted). This is because the Constitution protects the

> rights of individuals, not groups....'Government must treat citizens as individuals, not simply components of a racial [or] sexual...class.'

Id. at 1434 (Kennedy, J., concurring) (citation omitted).[52] Even assuming some real physical and biological differences between the sexes, it does not follow that such differences justify excluding

[51] VMI's claim that recruitment, "marketing" and fiscal considerations justify the remedial plan is unpersuasive under these precedents. The demand for both military school and single-sex education is quite small, J.A. Vol.II at 627 (Tyson), 676 (Riesman), and co-education might well increase demand. There is nothing in the record to indicate how many students choose VMI *because* it is single-sex, and how many attend *in spite of* that fact. Students might well select VMI to take advantage of the prestige and career opportunities it confers on graduates. *See United States v. Commonwealth*, 55 F.3d 90, 93 (4th Cir. 1995) (Motz, J., dissenting).

[52] The trial court relied on testimony that educational programs should be designed to meet the needs of the "average" student, not the "exception." *VMI I*, 766 F. Supp. at 1434. While this might be true for non-discriminatory programs, it fails to account for the obligation of public institutions to satisfy equal protection standards.

women from access to valuable state-supported benefits:

> [I]f the statutory objective is to exclude or "protect" members of one gender because they are presumed to suffer from an inherent handicap or to be innately inferior, the objective itself is illegitimate.

Hogan, 458 U.S. at 725. The claim that the alleged pedagogical benefit to men justifies discrimination ignores the Court's admonition that it is irrelevant "whether the benefited class profits from the classification." *Id.* at 731 n.17.

None of the reasons advanced by VMI to justify exclusion of women survives constitutional scrutiny.[53] In *J.E.B.*, this Court considered the constitutionality of gender-based peremptory challenges in jury selection.[54] The state asserted that a "special" interest in "establishing the paternity of a child born out of wedlock" justified the practice, 114 S. Ct. at 1426 n.8, because men and women might be expected to react differently to such claims. The Court, however, concluded that the "only legitimate interest [the state] could possibly have" was the interest in "securing a fair and impartial jury." *Id.* Even though "the peremptory...helps produce fair and impartial juries," *id.* at 1431

[53] Three possible interests have been identified: the "intrinsic value" of single-sex education, the education of "citizen soldiers," and educational diversity. *VMI II*, 44 F.3d at 1246 (Phillips, J., dissenting). All, however, are "after-the-fact rationalizations." *Id.* at 1247.

[54] Like *J.E.B.*, this case involves explicit sex-based conduct. *Compare Personnel Adm'r v. Feeney*, 442 U.S. 256 (1979) (veterans' preference disproportionately disadvantaged female civil servants, but male and female veterans qualified on the same basis) *with Wengler v. Druggists Mut. Ins. Co.*, 446 U.S. 142, 150 (1980) (intentional discrimination exists even where the classification is intended "'to favor [women], not to disfavor them'"). The assertion of a purportedly benign or neutral *reason* does not transform a sex-based barrier into a neutral practice. *See also International Union, UAW v. Johnson Controls*, 499 U.S. 187 (1991).

(O'Connor, J., concurring), "the Constitution guarantees a right only to an impartial jury, not to a jury composed of members of a particular race or gender." *Id.* at 1434 (Kennedy, J., concurring).

This analysis suggests that the "only legitimate interest [the state] could possibly have" here is an interest in providing quality education for qualified students. The right to an impartial jury enjoys considerably more constitutional protection than any claim to state-supported higher education, and the state's interest in promoting that right is substantial. Yet even this interest was insufficient to justify sex-based jury selection. Unlike the right of litigants to a fair and impartial jury, there is no "right" to single-sex higher education; if litigants have no right to insist on the composition of the jury, students have no right to a college "composed of members of a particular race or sex." If the state has no legitimate interest in discriminating on the basis of sex among potential jurors - even if some litigants arguably benefit (because the process may create a more impartial jury), the state can assert no cognizable interest in discriminating on the basis of sex among potential students - even if some students may arguably benefit.

Though the state's asserted interest in *J.E.B.* was plainly valid and designed to enhance a constitutionally protected right, it did not suffice to justify sex discrimination that would perpetuate stereotypes and "reflect and reinforce patterns of historical discrimination." 114 S. Ct. at 1428. The history of peremptory jury challenges belonged to a tradition of exclusion of women -- from jury service, law and civic life generally:

> When state actors...[rely] on gender stereotypes, they ratify and reinforce prejudicial views of the relative abilities of men and women....[T]hese stereotypes have wreaked injustice in so many other spheres of our country's public life....[S]tereotypes about the group's competence or predispositions...have been used to prevent them from...pursuing their chosen professions, or

> otherwise contributing to civic life.

Id. at 1427 & 1428 n.14. VMI's policy, "driven unchanged since its origins by a stereotyped view of the proper role and capabilities of women in society," *VMI II*, 44 F.3d at 1248 (Phillips, J., dissenting), reflects women's historical exclusion from military academies, many aspects of military service, and a range of job opportunities that incorporated a military-style culture, such as police and corrections officers. *See, e.g., Schlesinger v. Ballard*, 419 U.S. 498 (1975) (noting history of discrimination against women in the military). VMI's policy thus "serves to ratify and perpetuate invidious, archaic, and overbroad stereotypes about the relative abilities of men and women...." *J.E.B.*, 114 S. Ct. at 1422.

Other invidious stereotypes are reflected in the lower court's conclusion that co-education would lead to "jealousy and resentment," that "deliberate harassment" would affect women in unacceptable ways, and that "cross-sexual confrontation and interaction" would create "additional elements of stress and distraction."[55] Indeed, "one of the most insidious of the old myths about women [is] that women, wittingly or not, are seductive sexual objects...[whose] presence might provoke sexual assault. It is women who are made to pay the price in lost...opportunities." *Dothard v. Rawlinson*, 433 U.S. at 345 (Marshall, J., concurring in part and dissenting in part). This rationale for sex discrimination is also historically familiar:

> Reformers around the turn of the century argued [against] permitting the sexes to work side by side... because [women's] presence tempts men or because corrupt men will exploit innocent and vulnerable women....This concern reflects the belief in women's sexuality as an autonomous

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[55] *VMI I*, 976 F.2d at 896; *see also* 766 F. Supp. at 1435 ("adolescent males benefit from being able to focus exclusively on the work at hand, without the intrusion of any sexual tension").

> force over which neither they nor the men with whom they work have control.[56]

Even if it were true that "cross-sexual...interaction" creates a "distraction," there is no basis to conclude that women should be penalized and their educational opportunities sacrificed to facilitate men's ability to concentrate.

The plan, if approved, would "cure" sex discrimination in admissions to a highly prestigious, well-endowed institution that offers educational opportunities from which women have traditionally been excluded, by continuing to withhold the very benefits sought, and by offering instead access to an all-women's college modeled on conventional behavioral norms for women that is concededly inappropriate for the very women who seek entrance to VMI. VMI's unbroken tradition of discriminating against women, like the "long history" behind sex-based peremptory jury challenges, provides no defense; here, as there, the result is "doctrinally compelled." *J.E.B.*, 114 S. Ct. at 1428 nn. 12, 15

II. THE LOWER COURTS RELIED ON PALPABLY INSUFFICIENT EVIDENCE TO JUSTIFY CONTINUING SEX DISCRIMINATION.

The lower courts' legal conclusions were thus fatally flawed. Even taken at face value, VMI's claim that its policy is based on "scientific" evidence is unavailing. Even if that were not the case, however, this record would provide no basis for an exception to equal protection principles. Much of the testimony on which the lower courts relied is inherently unreliable because of the failure to insure that expert testimony met the standards for admissibility required by Rules 702 and 703 of the Federal Rules of Evidence:

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[56] National Research Council, National Academy of Sciences, *Women's Work, Men's Work: Occupational Segregation on the Job* 40 (Reskin & Hartmann eds., 1986).

> In a case involving scientific evidence, *evidentiary reliability* will be based on *scientific validity*....Faced with a proffer of expert scientific testimony, then, the trial judge must [undertake]...a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and...properly can be applied to the facts at issue.

Daubert v. Merrell Dow Pharmaceuticals, 113 S. Ct. at 2795 & n.9, 2796. The trial judge observed none of these precautions.

Witnesses who testified at the liability stage about alleged psychological and developmental differences between men and women, had no apparent expertise in the psychology of gender.[57] An expert qualified to testify about exercise physiology and physical education was permitted to offer opinions about women's motivation, aggressiveness, and "fear of failure," without evidence of expertise in these areas.[58] A VMI graduate, a fact witness who pursued a career in the Army, opined that women are more emotional than men and cannot endure stressful situations as well.[59] He possessed no apparent expert qualifications.

Witnesses at the remedy phase commonly cited personal experiences and anecdotal evidence to support generalizations about male and female characteristics. The *voir dire* of Dean Wilson revealed she had no expertise on "the psychology of gender" or the "development of college age women."[60] Over objection, she was accepted as an expert on "student development."[61] She was

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[57] Tr. at 376-78 (Conrad), 686 (Richardson).

[58] *Id.* at 931-40 (Davis). He also expressed opinions as to the relative merits of the skills he attributed to each sex. *See id.* at 939.

[59] *Id.* at 910 (Bissell).

[60] J.A. Vol. II at 588.

[61] *Id.* at 591.

permitted to testify to hearsay and anecdotes about sex-based behavioral and personality characteristics and to express her opinion on their implications for educational programs. Riesman testified that his knowledge of "the fate of women's colleges" derived from meetings with college presidents and from reading press clippings sent to him by a friend.[62]

Elizabeth Fox-Genovese, a historian, was previously director of a women's studies program at a coeducational institution and has never taught at a single-sex college. She has no training in psychology and no apparent expertise with regard to research on single-sex education.[63] She was permitted to testify to a conversation with a Mary Baldwin student, which provided support for her opinion about the remedial plan, although there is no evidence that this student was representative of any particular group. The court rejected the government's objection, stating "this is the way Dr. Fox-Genovese conducts her research by interview....Of course, this is the basis of her opinion. It doesn't necessarily mean what the young woman said is true."[64] There is no evidence that Fox-Genovese does research by interview, that she is trained in this social science research method, or that "the facts or data [on which she relied are] of a type reasonably relied upon by experts in the particular field in forming opinions." Fed.Rules Evid. Rule 703. To the contrary, anecdotal information is considered highly suspect. [65]

The trial court's findings about sex-based differences and

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[62] *Id.* at 696-97.

[63] *Id.* at 550-60. The testimony was general, vague, and largely unsupported; the reference to Valerie Lee's research is inaccurate. *See id.* at 565 and pp. 26-29 *infra*.

[64] *Id.* at 564.

[65] Overgeneralizing from anecdotes is a classic methodological error. *See* Earl Babbie, *The Practice of Social Science Research* 10-11 (4th Ed. 1986).

the value of single-sex education at VMI rest on anecdotes and speculation expounded by witnesses who were not properly qualified as experts and who were permitted to express opinions that were not properly supported.[66] This testimony, often admitted over objection, was used to reach conclusions about psychological and physiological characteristics of males and females and educational methods suitable to those characteristics, and to conclude that college-age males benefit from single-sex education.

Specifically, testimony that males and females develop differently, have different learning styles, and have different psychological and educational needs was a critical building block toward the conclusion that single-sex education is pedagogically justifiable for men. Much of this testimony relied on the research and writing of Carol Gilligan.[67] Gilligan's research and theories were used to support the claim that an educational program geared specifically to meet men's developmental and educational needs is effective and provides unique benefits for both the men who attend and for society at large, and that introducing women into this kind of setting would be counterproductive for women and would

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[66] The trial court relied heavily on both Riesman and Fox-Genovese. *See, e.g., VMI II*, 852 F. Supp. at 480-81. Curiously, the Court discounted the testimony of Alexander Astin, although VMI relied heavily on his work, see J.A. Vol. I at 276-79, 281-83, on the ground that he favors the "elimination of sexism and racism" and believes in the "public-private distinction." 852 F. Supp at 479. The court did not question Fox-Genovese's objectivity, although she "very much admire[s]" Mary Baldwin, J.A. Vol. II at 463; or Tyson's objectivity, although her institution stands to gain financially from the creation of VWIL, 852 F. Supp. at 499; or Bissell's objectivity, although he is a VMI alumnus.

[67] See Defendants' Proposed Findings of Fact and Conclusions of Law ¶235 at 42, ¶248 at 44, ¶286 at 51, *United States v. Commonwealth of Virginia, et al.* (W.D.Va.)(Civ. Action No.90-0126-R) and Defendants' Trial Ex. 73, *Materials Regarding Single-Sex Education*, designated Ex.130A on remand. She was also cited in the testimony of Riesman and Richardson. Blythe McVicker Clinchy, *amica* herein, the co-author of *Women's Ways of Knowing* is also cited.

deprive men of an unique and valuable opportunity. However, nothing in Gilligan's work provides support for these propositions. The fact that she observed certain differences that are associated with (but not caused by) gender also does not support the conclusion that men should be separated from women for educational purposes.

The testimony in this case misconstrues the purpose and import of Gilligan's work, in particular her acclaimed book, *In A Different Voice: Psychological Theory and Women's Development* (1982). There, she addressed a problem she observed in her research on psychological development: that women's descriptions of their experiences and responses to experiences did not conform to descriptions of "normal" human development reflected in classical psychological theory articulated by Freud, Erikson, Piaget, and Kohlberg. While these classical theorists concluded there was something wrong with women, Gilligan concluded that there was something wrong with psychological theory.

According to Gilligan's analysis, classic psychological theory suffered from two flaws. First, the theory attached affirmative value to certain characteristics culturally defined as "masculine," such as separation, detachment, subordination of relationships, and abstract thinking, while ignoring universal human characteristics culturally defined as "feminine," such as attachment and interdependence. Secondly, the theory was premised on incomplete factual data because virtually all of the studies cited in support had been conducted exclusively on males.[68] The research was thus tainted by a fundamental sampling error that rendered its conclusions suspect.

The observations about psychological development patterns that are generally associated with gender in *In a Different Voice* are not based on any premise of inherent differences between the sexes, but on the basis of their different opportunities and

[68] *See, e.g.*, Daniel Offer, *The Psychological World of the Teenager: A Study of 175 Boys* (1969).

experiences. The book states: "the different voice I describe is characterized not by gender but by theme....the contrasts between male and female voices are presented here to highlight a distinction between two modes of thought and to focus a problem of interpretation rather than to represent a generalization about either sex."[69] There is too much variation within each sex to argue that psychological differences result from "real" differences between the sexes. It is incontrovertible, for example, that qualities such as aggression and empathy are not sex-based -- women can be aggressive and men can be empathetic.

VMI also relied on the work of Valerie Lee.[70] Her research provides scholarly support for the proposition that single-sex education at the secondary school level provides benefits for young *women* on many educational outcomes, including achievement, attitude and behaviors.[71] However, the efficacy of single-sex education is shown in a plethora of studies to be gender-specific and restricted to young women. These studies speculate that a cause for their findings is that females experience forms of discrimination in education that males do not experience.[72] Single-sex education thus benefits females, who choose it, since in these

[69] Gilligan, *In a Different Voice, supra*, at 2.

[70] J.A. Vol. II, pp. 298-99, Defendants' Ex. 130A contains references to Lee's work. Fox-Genovese also cited Lee ("schools such as Mary Baldwin make their greatest contribution to students who are less than very [affluent],...they do introduce them to ambition ....This is borne out by...Valerie Lee and her coworkers..."). J.A. Vol. II at 565.

[71] *See* Anthony Bryk, Valerie Lee & P.B. Holland, *Catholic Schools and the Common Good* 225-41 (1993); Lee & Bryk, *Effects of Single-Sex Secondary Schools on Student Achievement and Attitudes*, 78 J.Educ.Psych. 381 (1986); Valerie Lee & Helen Marks, *Sustained Effects of the Single-Sex Secondary School Experience on Attitudes, Behaviors, and Values in College*, 82 J. Educ. Psych. 578 (1990).

[72] Valerie Lee, et al., *Sexism in Single-Sex and Coeducational Independent Secondary School Classroom*, 67 Sociol. of Educ. 97 (1994).

settings this gender-specific disadvantage is reduced or eliminated. Programs for young women succeed for reasons that do not apply to men. [73]

These data provide no support for the efficacy of single-sex education for young men. In fact, the very studies that demonstrate a positive effect for women fail to show such an effect for men; they find no statistically significant or consistent difference between males with single-sex and coeducational experience in terms of achievement, attitude or behavior. Thus, "...the classroom effects for male and female students are quite different. Coeducational classrooms appear to enhance male achievement, whereas single-sex classrooms appear to enhance female achievement."[74] Not only is there an absence of data to support the conclusion that single-sex education benefits males, some studies even demonstrate a negative effect. In a recent observational study on gender bias in education, Lee documents both a higher incidence of sexism in all-male settings and fewer occasions in which instances of equity were observed.[75] In a report on single-sex education prepared by the Department of Education, Lee reviewed the principal findings from that study: "the most serious incidents of sexism we observed were in all-boys' classes with male teachers....we saw females regarded as sex objects, both in writing, in classroom displays, and in class discussion." She concludes that the "research did not indicate that, in general, all-male environments were especially healthy ones for

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[73] As a legal matter, programs designed for women and girls are justifiable, if at all, on the ground that they counteract the consequences of the discrimination many females still experience. *See* Lani Guinier, Michelle Fine and Jane Balin, *Becoming Gentlemen: Women's Experiences at One Ivy League Law School*, 143 U. Pa. L. Rev. 1 (1994).

[74] Emanuel Jimenez & Marlaine Lockheed, *Enhancing Girls Education Through Single-Sex Education: Evidence and a Policy Conundrum*, 11 Educ. Eval. and Policy Anal. 117, 125 (1989).

[75] Lee, *supra*.

adolescents in terms of sex equity."[76]

Advocates of single-sex education concede that the results of studies on the effects of single-sex education for men "are generally null or negative."[77] Other scholars contend that their research demonstrates that coeducation provides greater benefits to students of *both* sexes than does single-sex education.[78] On both sides of the professional debate about the relative merits of single-sex versus coeducation for young *women*, experts concede the absence of data demonstrating the efficacy of single-sex education for *men*: "The data are consistent with the conclusion that ....most productive [colleges] for men are coeducational."[79]

The fact that positive outcomes are sometimes associated with single-sex education does not establish single-sex as the cause of those outcomes. Lee identifies other structural and organizational characteristics of girls' schools that may account for their success, rather than gender homogeneity *per se*. These characteristics include "communal school organization [which] has powerful positive effect on the engagement and commitment of

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[76] Valerie Lee, *Single-Sex Schooling: What Is the Issue?*, *in* U.S. Dept. of Educ. *Single-Sex Schooling: Proponents Speak* 43-44 (1993).

[77] Cornelius Riordan, *The Case for Single-Sex Schools*, in U.S. Dept. of Educ. *Single-Sex Schooling: Proponents Speak* 48 (1993). Riordan contends, however, that the data apply only to males who are part of the majority culture, not to minority males.

[78] Herbert Marsh, *Public, Catholic Single-Sex, and Catholic Coeducational High Schools: Their Effects on Achievement, Affect, and Behaviors*, 81 J. Educ. Psych. 320 (1989).

[79] M. Elizabeth Tidball, *Educational Environments and the Development of Talent*, U.S. Dept. of Educ., *Single-Sex Schooling: Proponents Speak* 58 (1993). Even the trial court concluded that "coeducation [would provide] a better training program from the perspective of the armed forces, because it would provide training dealing with a mixed-gender army." 766 F. Supp. at 1441.

students and teachers" and smaller size, "which helps foster a communal environment."[80] Alexander Astin, author of *Four Critical Years: Effects of College on Beliefs, Attitudes, and Knowledge* (1977), observes that the "admission of women by colleges that formerly admitted only men has not substantially altered their unique effects on student development ....Therefore, I must conclude that it was not single sex status *per se* that yielded the positive effects observed for single sex colleges for men....."[81]

The record and the professional literature fail to support VMI's claim that any educational success is attributable to its single-sex environment, as opposed to the quality of its facilities, its faculty-student ratio or other factors. VMI's claim that discrimination is "scientifically" justifiable is contested by some of the very experts VMI cites. Its reliance on unsupported theories about purported sex-based differences and hypothetical "average" women cannot conceal the fact that real women are as qualified to attend VMI as the men who have for so long enjoyed exclusive access.

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[80] Lee, *What Is the Issue? supra*, at 42-43.

[81] Johnson v. Jones (D.S.C.) (Civ. Action No. 2:92-1674-2) (Affidavit dated January 8, 1993 at p. 6, ¶12).

CONCLUSION

Wherefore, *amici* respectfully request that the Court hold that VMI's policy of excluding women violates the Equal Protection Clause.

Respectfully submitted,

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APPENDIX

The American Association of University Professors (AAUP) is a national membership organization of more that 44,000 faculty members and research scholars in all academic disciplines. Founded in 1915, AAUP develops recommended policy standards to advance academic freedom, tenure, nondiscrimination, and other important values in American colleges and universities. The availability of full opportunities for female faculty and students is a major goal of the association.

The Center for Women Policy Studies is an independent feminist policy research and advocacy institution founded in 1972. Throughout its history, the Center has concentrated on complex and cutting edge women's issues. The Center's Education Equity Policy Studies program has produced landmark research on sex bias in the SAT and founded the bias in Testing Task Force of the National Coalition for Women and Girls in Education. The Center has also demonstrated its commitment to intergenerational partnerships among women and to the development of leadership among young women by offering opportunities and encouraging leadership in policy arena, feminist issues, and in constructing strategies for institutional change. The Center also formed a partnership with the Wider Opportunities for Women and the American Council on Education to bring low income women into higher education.

The Program on Gender, Science and Law is a multi-disciplinary policy program situated at the Columbia University School of Public Health and staffed by members of the Faculty of Medicine of Columbia University. One of its missions is to examine how scientific information and theories about gender are applied in legal contexts and to evaluate the sufficiency of scientific evidence about gender that will influence the legal rights of men and women. Among other things, the Program provides expert testimony to legislatures, provides information and analysis to governmental officials and others, and submits briefs on relevant cases in federal and state courts. Recently, the Program submitted an *amicus* brief in the Supreme Court in *Daubert v. Merrell Dow*

Pharmaceuticals, 113 S.Ct. 2786 (1993), on standards for the admissibility of expert testimony in federal courts.

Stanley Aronowitz, Ph.D., is a Professor of Sociology at the City University of New York Graduate Center. He has founded 3 Public Alternative High Schools and written innumerable articles on issues of learning curricula. He is, in addition, the author of 12 books, two of which concern the educational system: *Education Under Siege* (with Henry Jereux) and *Postmodern Education*.

Stephanie J. Bird, Ph.D., a neuroscientist, is Special Assistant to the Provost of the Massachusetts Institute of Technology. She is a former President of the Association for Women in Science (AWIS), Principal Investigator and Project Director of the AWIS Mentoring Project, recipient of the Mellon Fellowship in the Science, Technology and Society Program at M.I.T. and a Visiting Scholar at the Hastings Center Institute of Society, Ethics and the Life Sciences. She is co-editor of the journal *Science and Engineering Ethics* and the author of numerous professional publications.

Patricia Campbell, Ph.D., for the past fifteen years has directed Campbell-Kibler Associates, an educational consulting firm specializing in educational research and evaluation with an emphasis on science and math education and issues of gender and ethnicity. She has received numerous awards for educational research and journalism. She assisted in designing the National Institute of Education's Program to encourage women and minorities to become educational researchers. She has been an ongoing reviewer for various National Science Foundation programs including summer science camps and women and girls' programs. She has authored over eighty books, chapters, and articles which include: *Redefining the 'Girl Problem' in Mathematics* in *New Direction for Equity*; *Gender and Mathematics Research, NCRMSE Research Review*; and *Gender Equity: The Unexamined Basic of School Reform* in *Stanford Law and Policy Review*. She serves as an editor or reviewer on six professional journals and has served on various committees of the American

Educational Research Association including the Committee on Guidelines for Eliminating Bias in Research and the Committee on Special Interest Groups. She has been an expert witness for the plaintiff in the sex discrimination case against The Citadel, an all-male, state supported college in South Carolina.

Blythe McVicker Clinchy, Ph.D., is a Professor of Psychology at Wellesley College. She has studied the educational and cognitive development of college women under grants form the U.S. Department of Education, the Carnegie Foundation and the Spencer Foundation. She is the co-author of *Women's Ways of Knowing*, (1986) (cited by Respondents in this case), and is currently co-editing *Women's Ways of Knowing Revisited* and *Essential Papers in Gender and Psychology*. She has served on the board of several professional journals and numerous associations including the Center for Research on Women, the Association of American Colleges and the National Conference on Education for Women's Development.

Mary Crawford, Ph.D., is Professor of Psychology and Women's Studies at West Chester University of Pennsylvania. She held the Jane W. Irwin Chair in Women's Studies at Hamilton College, served as Distinguished Visiting Teacher/Scholar at Trenton State College, and directed the graduate program in women's studies at the University of South Carolina. She has written extensively on the psychology of sex differences and issues associated with scientific measurement. Her publications include the books *Gender and Thought*, (1989); *Talking Difference: On Gender and Language*, (1995); and *Women and Gender: A Feminist Psychology*, (1992). She is the author of numerous professional articles and serves on the editorial boards of three journals dealing with gender and psychology. In the capacity of Research Director for the Women's College Coalition, she helped implement a three year research project on optimum educational environments for women. She is active in the Division on the Psychology of Women of the American Psychological Association as well as many regional and national groups concerned with gender equity.

Faye J. Crosby, Ph.D., is Professor of Psychology at Smith College. She held the first Adeline Barry Davee Chair at the J.L. Kellogg Graduate School of Management and was the William P. Huffman scholar in residence at Miami University. She has also been awarded the Yale College Prize for Distinguished Undergraduate Teaching and the Smith College Award for Excellence and Dedication in Teaching. She is an expert on gender issues and psychology and has served on the review boards of five professional journals, is a member of numerous professional societies and has been a member of the Council of the Society for the Psychological Study of Social Issues and is an ad hoc reviewer for the American Psychological Association and the National Science Foundation. She has co-authored and edited over 80 books and articles.

Kay Deaux, Ph.D., is Distinguished Professor in Psychology at City University of New York Graduate Center. She has a twenty five year history of research and writing about gender issues. She has served in an advisory capacity to the National Science Foundation, the National Institute of Mental Health, the Woodrow Wilson Foundation, and Princeton University's Women's Studies Program. She is on the editorial board of 12 professional journals and the American Psychological Association's *Encyclopedia of Psychology*. Her books include *The Behavior of Women and Men*, one of the first books to define the area of gender and social psychology, and *Women of Steel*, a study of women in blue-collar jobs. She is the recipient of several National Science Foundation grants. Her empirical research includes studies of gender stereotypes, attributions and causal explanations for performance, gender identity, and general patterns of gender-related behavior.

Cynthia Fuchs Epstein, Ph.D., is Distinguished Professor of Sociology at the City University of New York Graduate Center. She has held a Guggenheim Fellowship, was a Fellow of the Center for Advanced study in Behavioral Sciences at Stanford, Resident Scholar at the Russell Sage Foundation and served as the co-director of the Program on Sex Roles and Social Change at Columbia University. She has also served as a consultant to the

White House under two administrations. She has written extensively on her research on women in professions, business, and politics. Her publication *Women in Law* received the SCRIBE's Book Award and the Merit Award of the American Bar Association. She also authored *Deceptive Distinctions: Sex, Gender and the Social Order* in which she analyzes changing paradigms in the social sciences with regard to sex differences and similarities. She has been an expert witness for the plaintiff in the sex discrimination case against The Citadel, an all-male, state supported college in South Carolina.

Michelle Fine, Ph.D., is Professor of Psychology at City University of New York Graduate Center. She has been the recipient of numerous awards for distinction in teaching, research, and service. She has been the Principal Investigator on many research projects addressing gender issues, education and adolescence. She received the Janet Helms Distinguished Scholar award from the Teacher's College of Columbia University in 1994, the American Educational Studies Association Critic's Choice Award for her book *Disruptive Voices: The Possibilities of Feminist Research*, and numerous other awards. She is author, co-author, or editor of approximately 90 books, chapters, and articles. She currently serves as a consultant for the New Vision Schools in New York City and is a board member of Pew Forum on Educational Reform and the National Center for Restructuring Education, Schools and Teaching. She has been an expert witness for the plaintiff in the sex discrimination case against The Citadel, an all-male, state supported college in South Carolina.

Carol Gilligan, Ph.D., is Professor of Human Development and Psychology at Harvard University, Graduate School of Education. Her areas of specialty include human development, psychology of adolescence, psychology of women, identity development, and moral development and education. She received an M.A. from Radcliffe College, a Ph.D. from Harvard University, and honorary degrees from Regis College, Swarthmore College, Haverford College, and Wesleyan University. She is the recipient of numerous prizes, awards, and honors. She serves on the boards of ten professional journals, has served as principal

investigator on fourteen research projects, and has authored more than eighteen professional publications. Her book, *In A Different Voice: Psychological Theory and Women's Development* has been translated into nine foreign languages. Her research and theories were cited extensively by witnesses for VMI in support of its efforts to maintain its single-sex status. This use of her research distorts its findings, and she repudiates the conclusions drawn by VMI in this case.

Mary S. Henifin, M.P.H., J.D., is an Adjunct Assistant Professor of Public Health Law at Robert Wood Johnson Medical School. She is editor for Public Policy and Law for the journal *Women and Health* and also is editor of the journal *Trends in Medicine, Law, and Ethics*. She has lectured and written extensively on scientific issues as they affect women and was co-editor of the pioneering book *Biological Women: The Convenient Myth* (1981).

Ruth Hubbard, Ph.D., is Professor Emerita of Biology at Harvard University. She has received honorary degrees from universities in the United States and Canada and has also received awards including the Distinguished Service award from the American Institute of Biological Sciences. She is the editor of five collections of writings about gender and science. She has authored more than 150 articles in books, professional journals, and popular magazines including *The Politics of Women's Biology*, (1990) and *Explaining the Gene Myth*, (1993). She served in an advisory capacity to many scientific organizations including the Board of Trustee's of the Woods Hole Marine Biological Laboratory where she is now a Trustee Emerita. She also serves on the Board of Directors of Science for the People and on the editorial board of Women and Health.

Vilma Hunt, B.D.S., M.A., has served as a member of the Environmental Protection Agency's Science Advisory Board and is currently a consultant in environmental and occupational health, having worked in the United States, Canada, Europe, and Asia. She is an adjunct faculty member at the University of Massachusetts at Lowell, has served as Visiting Lecturer at

Harvard School of Public Health, as Professor of Environmental Health at Pennsylvania State University, and as Assistant Professor of Environmental Health at Yale University School of Medicine. She has also held visiting faculty positions at various other universities in the United States and Asia. She has been the recipient of several honors and awards, including the National Endowment for the Humanities Award. She has authored the influential book *Work and the Health of Women* (1979) as well as over twenty-five other articles, chapters, and books, several of which focus on the environmental hazards experienced by women in the workplace.

Anne S. Kasper, Ph.D., is an Adjunct Assistant Professor at the Center for Research on Women and Gender at the University of Illinois at Chicago, where she is also the recipient of the Center's Women's Health Policy Research Fellowship. She has been an advocate, journalist, researcher and public policy specialist on women's health for more than 20 years, and was health editor of *New Directions for Women*, and editor of the journal *Women & Health*. As the first co-chair of the National Women's Health Network, she was instrumental in gaining national attention for women's health issues. Most recently, she directed the Campaign for Women's health, a coalition of more than 100 national, state, and grassroots organizations convened to set and promote an agenda for women's health in health care reform.

Penelope Kegel-Flom, Ph.D., is Associate Professor at the University of Houston College of Optometry and currently serves as President of the national Association for Women in Science (AWIS), where she has developed a national leadership development program for women in science. AWIS is the largest multi-disciplinary science organization for women in the United States, and is committed to the achievement of equity and full participation of women in all areas of science and technology. She has taught courses and workshops on leadership for women and men, and has recently developed a course entitled, "Women's Health: New Perspectives." She received an outstanding faculty award from the City of Houston in 1992 and was honored as a Woman of Excellence by the Federation of Houston Professional

Women in 1994. She was the AWIS delegate to the Non-Governmental Forum and the Fourth U.N. World Conference on Women in Beijing in China. Dr. Kegel-Flom is the also the author of numerous articles in scientific journals, which focus primarily on the personality dimensions of leadership, leadership among women scientists, and prediction of performance in the health professions.

Evelyn Fox Keller, Ph.D., is a Professor in the Program in Science, Technology and Society at M.I.T., and has held professorial positions at U.C. Berkeley, Princeton, Cornell, and Northeastern University. A recipient of numerous awards and honorary doctorates, including the prestigious MacArthur fellowship, Dr. Fox Keller has published several books dealing with gender and science, including *Reflections on Gender and Science*, at Yale University Press (1985), which has been translated into German, Italian, Japanese, Dutch, and Finnish. Her most recent work, *Refiguring Life: Metaphors of Twentieth Century Biology*, was published by Columbia University Press in 1995.

Valerie E. Lee, Ed.D., is Associate Professor of Education at the University of Michigan. She received her doctorate from Harvard University and specializes in research, measurement and evaluation of educational programs and in the sociology of education. She is the author of more than 50 professional articles, most of which appear in peer reviewed professional journals and many of which address the efficacy of single-sex education. She has received numerous awards and recognition for her work, including awards from the American Sociological Association, American Academy of Education, United States Department of Education, and Rockefeller Foundation. She has directed approximately twenty research studies, serves on the editorial and review boards of 15 professional journals, and has served as an advisor to private and public entities on a wide variety of educational topics, including but not limited to single-sex education. Though defendants cited Dr. Lee's research in defense of the position that single-sex education at VMI is pedagogically justifiable, their use of the material distorted Dr. Lee's research, and Dr. Lee repudiates the conclusions VMI has drawn.

Zella Luria, Ph.D., is Professor of Psychology and American Studies at Tufts University. She has, in addition, held a visiting professorship in Clinical Psychology at the University of Florida at Gainesville, as well as visiting professorships in Developmental Psychology at UCLA and the University of Michigan. She has practiced as a licensed clinical psychologist in Massachusetts, has been elected Fellow of the Developmental Division of the American Psychological Association, charter Fellow of the American Psychological Society, and President of the New England Psychological Association. For the past 25 years, she has conducted extensive research in sex, gender, and sexuality, and has received support from The Ford Foundation, The Mellon Foundation, and the U.S. Public Health Service, among others. She has authored several articles, and is the senior author of two volumes on human sexuality. She has a book due out from Harvard University Press in 1997, entitled *Sex and Gender: A Psychological View*.

Maureen Paul, M.D., M.P.H., is Associate Professor in the Departments of Obstetrics and Gynecology and Family and Community Medicine at the University of Massachusetts Medical School, Director of the Occupational and Environmental Reproductive Hazards Program at the University of Massachusetts Medical Center, and visiting lecturer at the Harvard University School of Public Health. She has been invited to present her research and conclusions before over 50 organizations, including the Australasian College of Physicians and Surgeons (as keynote speaker), the Massachusetts Bar Association, and the U.S. Navy, Division of Occupational Health and Preventive Medicine. She has served on several advisory boards and boards of directors, and is a fellow of the American College of Obstetricians and Gynecologists. She is, in addition, a member of various professional health organizations and the recipient of the American Medical Women's Association Reproductive Health Award.

Diane S. Pollard, Ph.D., is Professor of Educational Psychology at the University of Wisconsin - Milwaukee. She received her doctorate in education from the University of Chicago. Her research, which has been supported by the federal

government and private entities, focuses on gender and race and their implications for educational achievement, educational policy, and school programs. She has authored more than 20 publications, many of which appear in peer-reviewed professional journals. She has presented numerous papers at professional meetings and works actively with professional societies on issues related to educational policy and programs for women and African-Americans.

Susan Reverby, Ph.D., is Luella LaMer Professor for Women's Studies at Wellesley College. She has held various prestigious teaching positions, including the W.E.B. Du Bois Fellowship at Harvard University and a place as Visiting Scholar at University of Pennsylvania School of Nursing. She has published over 40 articles, chapters, and books that explore the social context of gender roles, including her most recent (with Dorothy O. Helly), at Cornell University Press, entitled *Gendered Domains: Beyond the Public-Private in Women's History* (1992).

Jo Sanders, Research Professor at the College of Education, University of Washington, has directed nationwide projects on gender equity in science, technology, and mathematics education and careers since 1979. She has spearheaded projects dealing with gender equity in math, science, and technology education, and is currently the Principal Investigator in the three-year Teacher Education Equity Project, for which NSF, IBM, Hewlett Packard and AT&T are funding 60 professors of science, mathematics and technology, in 38 colleges and 26 states, to develop materials on gender equity. The recipient of the 1992 American Educational Research Association's Women Educators Curriculum Award, she has written numerous books, chapters, and articles on gender equity in technology, science and mathematics. Her most recent publication is *Lifting the Barriers: 600 Tested Strategies that Really Work to Increase Girls' Participation in Science, Mathematics and Computers* (1994).

Bernice Sandler, Ed.D., is a Senior Scholar in Residence at the National Association for Women in Education. Dr. Sandler writes and consults with colleges and universities on the subject of achieving equity for women on campus. In addition to receiving

numerous awards and nine honorary degrees, she has authored more than 60 articles and has given more than 1700 presentations around the country on sex discrimination in education. Nationally recognized for her expertise in educational policy and programs, Dr. Sandler was a principal drafter of Title IX of the Education Amendments of 1972, and has testified thirteen times before the United States Congress on gender equity issues in education. Dr. Sandler was appointed by Presidents Ford and Carter to the National Council on Women's Educational Programs, and formerly served as Chair of that Council.

Ellen Wahl, a senior scientist with Education Development Center, Inc., is currently involved in major projects, supported by the National Science Foundation, to increase access and participation in math, science, and technology for girls and women, people of color, and people with disabilities. For ten years prior to this, Ms. Wahl worked with Girls Incorporated, a research program and advocacy youth organization dedicated to helping girls grow up "strong, smart, and bold," and for five years served as the founding director, and then national Director, of Operation SMART, a program to encourage girls' participation in math and science. She is a Research Associate of the Center for Policy Research, and has worked for more than 20 years in program development, applied research, and policy analysis. She has been a reviewer and review panelist for NSF for Informal Science Education, Girls and Women, and Summer Science Camps, and serves on several advisory boards, as well as on the board of directors of Educational Equity Concepts, the steering committee of the Alliance for Mainstreaming Youth with Disabilities, and the national council of Science Linkages in the Community, a project of the American Association for the Advancement of Science.

Leslie Wolfe, Ph.D., is President of the Center for Women Policy Studies, a Washington-based national feminist policy research and advocacy organization. Under her direction, the Center has developed programs such as the Educational Equity Policy Studies and Economic Opportunities for Low Income Women Program. She came to the Center for Women Policy

Studies from a position as Director of Project on Equal Education Rights and from another as Director of the Women's Educational Equity Act Program at the U.S. Department of Education. She also has served as Deputy Director of the Women's Rights Program in the U.S. Commission on Civil Rights and as Special Assistant to the Assistant Secretary for Education in the (former) Department of Health, Education, and Welfare. She currently serves on several boards, including the Montgomery County (MD) Commission for Women and the Policy Advisory Board of the Disability Rights Education and Defense Fund. She has also served as Chair of the National Coalition for Women and Girls in Education, and as a board member of the National Council for Research on Women. She has contributed numerous publications to the study of women's roles, including *'Like She Owns the Earth': Women and Sports* (1985), *Women, Work, and School: Occupational Segregation and the Role of Education* (ed., 1990), and *Feminism Lives: Building a Multicultural Women's Movement in the United States* (1995).